



# Volunteer Lake Assessment Program Individual Lake Reports

## CRYSTAL LAKE, GILMANTON, NH

### MORPHOMETRIC DATA

Watershed Area (Ac.):	17,627	Max. Depth (m):	16.2	Flushing Rate (yr <sup>-1</sup> )	3.8	Year	Trophic class	KNOWN EXOTIC SPECIES
Surface Area (Ac.):	441	Mean Depth (m):	5	P Retention Coef:	0.48	1989	OLIGOTROPHIC	
Shore Length (m):	7,600	Volume (m <sup>3</sup> ):	8,998,500	Elevation (ft):	623	2003	OLIGOTROPHIC	

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

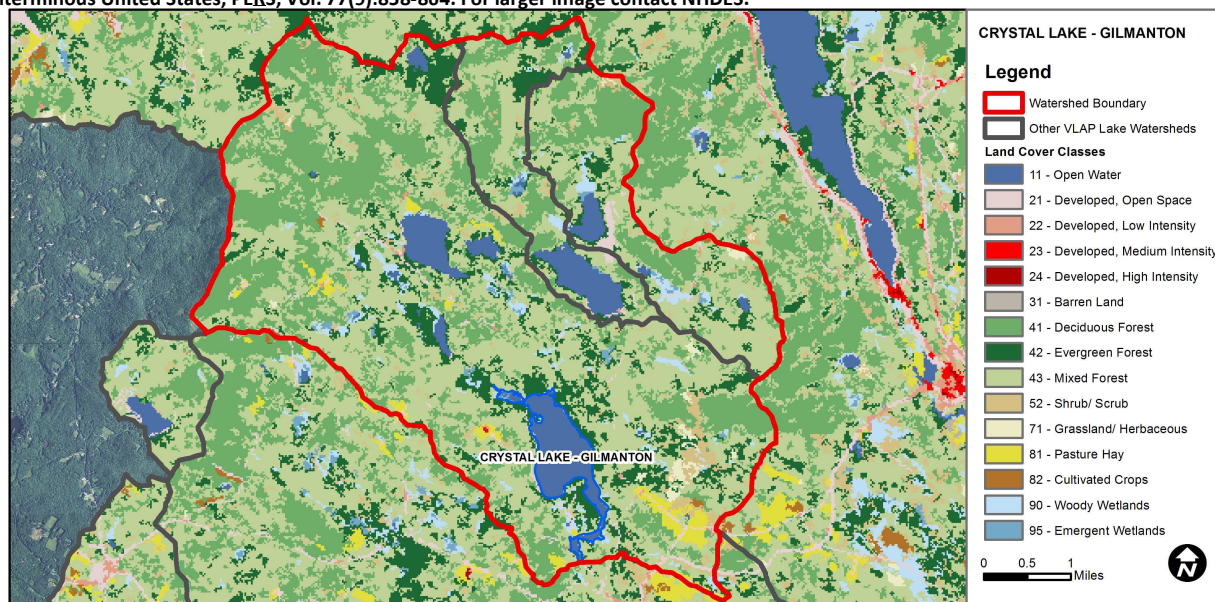
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	>=5 samples and median is >threshold.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	D.O. (mg/L)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	D.O. (% sat)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	>5 samples and median is > threshold.
Primary Contact Recreation	E. coli	No Data	No Data for this parameter.
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

### BEACH PRIMARY CONTACT ASSESSMENT STATUS

CRYSTAL LAKE-TOWN BEACH	E. coli	Bad	>=1 exceedance(s) of geometric mean criterion and/or >=2 exceedances of single sample criterion, with 1 or more >2X criteria.
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### WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	6.31	Barren Land	0	Grassland/Herbaceous	0.65
Developed-Open Space	1.27	Deciduous Forest	27.82	Pasture Hay	1.57
Developed-Low Intensity	0.13	Evergreen Forest	12.1	Cultivated Crops	0.1
Developed-Medium Intensity	0.01	Mixed Forest	44.52	Woody Wetlands	2.22
Developed-High Intensity	0	Shrub-Scrub	2.8	Emergent Wetlands	0.52



# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

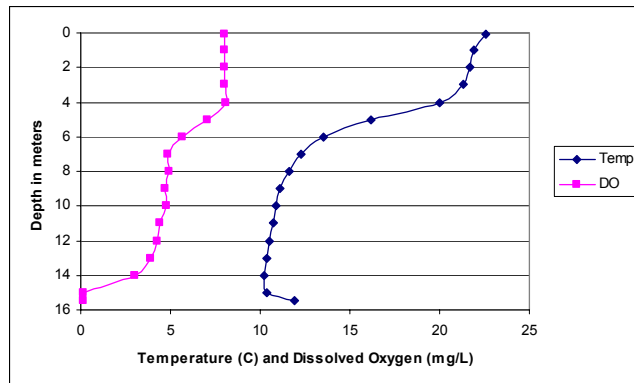
## CRYSTAL LAKE, GILMANTON, NH

### 2012 DATA SUMMARY

#### OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphic)

- 🔥 **CHLOROPHYLL-A:** Chlorophyll levels were fairly low and historical trend analysis indicates a relatively stable chlorophyll level since monitoring began.
- 🔥 **CONDUCTIVITY/CHLORIDE:** Lake and tributary conductivity was low in 2012 and below the NH lake median.
- 🔥 **TOTAL PHOSPHORUS:** Deep spot phosphorus was low throughout the summer. Historical trend analysis indicates the epilimnetic (upper layer) phosphorus has remained relatively stable since monitoring began. Phosphorus in Nats Bridge Brook was elevated likely due to wetland influences. Phosphorus in The Brook was also slightly elevated but may be naturally occurring.
- 🔥 **TRANSPARENCY:** Transparency was slightly lower than measured in the past few years; however historical trend analysis indicates transparency has remained stable since monitoring began.
- 🔥 **TURBIDITY:** Hypolimnetic (lower water layer) turbidity increased as the summer progressed however this can be a natural process. Nats Bridge Brook experienced slightly elevated turbidity throughout the summer likely due to low water flows.
- 🔥 **pH:** Deep spot pH levels historically lower than desirable and can be critical to aquatic life.
- 🔥 **RECOMMENDED ACTIONS:** Maintain monthly monitoring to continue establishing comprehensive data set and trend analysis. Educate watershed residents on ways to reduce stormwater runoff from their properties. Keep up the great work!

#### Dissolved Oxygen & Temperature Profile



Station Name	Table 1. 2012 Average Water Quality Data for CRYSTAL LAKE						
	Alk.	Chlor-a	Cond.	Total P	Trans.		pH
	mg/l	ug/l	uS/cm	ug/l	m		
					NVS	VS	
Covered Bridge Brook			35.7	8			0.39 6.84
Deep Epilimnion	3.1	3.00	31.4	8	4.54	5.22	0.67 6.73
Deep Metalimnion			32.4	9			0.88 6.27
Deep Hypolimnion			35.7	12			4.29 6.01
Nats Bridge Brook			33.9	26			2.12 6.12
Outlet			33.1	10			1.21 6.73
The Brook			25.5	22			0.35 6.42
Wood Bridge Brook			30.3	10			0.58 6.76

**NH Median Values:** Median values for specific parameters generated from historic lake monitoring data.

**Alkalinity:** 4.9 mg/L

**Chlorophyll-a:** 4.58 mg/m<sup>3</sup>

**Conductivity:** 40.0 uS/cm

**Chloride:** 4 mg/L

**Total Phosphorus:** 12 ug/L

**Transparency:** 3.2 m

**pH:** 6.6

**NH Water Quality Standards:** Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

**Chloride:** < 230 mg/L (chronic)

**E. coli:** > 88 cts/100 mL – public beach

**E. coli:** > 406 cts/100 mL – surface waters

**Turbidity:** > 10 NTU above natural level

**pH:** 6.5-8.0 (unless naturally occurring)

#### HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	Stable	Data not significantly increasing or decreasing.
Transparency	Stable	Data not significantly increasing or decreasing.
Phosphorus (epilimnion)	Stable	Data not significantly increasing or decreasing.

This report was generated by the NH DES Volunteer Lake Assessment Program (VLAP). For more information contact:  
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#### Historical Deep Spot Chlorophyll-a, Epilimnetic Total Phosphorus & Transparency Data

